

Original Article

# Pregnancy Outcome Following Large Loop Excision of the Transformation Zone (LLETZ)

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## Abstract

**Objective:** This study was undertaken to ascertain whether large loop excision of the transformation zone (LLETZ) for cervical intraepithelial neoplasia (CIN) has any adverse effect on subsequent pregnancy and labor. **Method:** Twenty five women who became pregnant following LLETZ were prospectively followed up and their case notes were analyzed for pregnancy and labor outcome. **Results:** There were 30 pregnancies in 25 women. The mean age was 26.2 years. Of the 30 pregnancy episodes, six were primigravidae and 24 were multigravidae. 46.7% of the pregnancies occurred within 6 months of LLETZ. Of the 23 cases where pregnancy continued after 12 weeks, cervical length was assessed by scan in 11 cases. The cervical length was less than 3cm in two cases. Cervical encerclage was carried out in six cases. 91.3% of the women delivered at term and 8.7% had preterm delivery. **Conclusion:** This study showed that LLETZ of the cervix was not associated with adverse pregnancy outcome.

**Key Words:** Large loop excision of transformation zone, pregnancy outcome, excisional methods

## Introduction

In recent years LLETZ in the management of CIN lesions has gained wide popularity. Treatment of CIN lesions with ablative methods such as cryotherapy, electro coagulation and laser vaporization is not known to be associated with adverse pregnancy outcome. However, high grade CIN lesions necessitate more effective methods such as cold knife cone biopsy and LLETZ. These methods are effective and cervical tissue is available for histopathological examination to rule

out invasive carcinoma. Conventional cold knife cone excision of the cervix is known to be associated with incompetence of cervix leading to adverse pregnancy outcome such as mid-trimester abortions. However LLETZ of the cervix seems to be a simple and effective method of managing CIN lesions and has not been reported to result in adverse pregnancy outcome in subsequent pregnancies. Therefore, the present study was undertaken to ascertain 1) Whether LLETZ has any adverse outcome in subsequent pregnancies and labor 2) To elicit whether any adverse outcome is related to the cone and 3) To see whether outcome can be improved by the use of encerclage in pregnancy.

## Methodology

This was a prospective study of 25 women who became pregnant following LLETZ of the cervix. From the previous case records, the indication for LLETZ, the depth of cervical cone removed at the time of surgery, and

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previous pregnancy complications such as miscarriages and pre-term labor were noted. Cases were followed up from the time of conception to delivery. Ultrasound scan for cervical length was carried out between 13-14 weeks of gestation in those women who have had previous pregnancy complications and those who have had more than one centimeter depth of cervical cone removed at the time of LLETZ. With normal non-pregnant cervical length being more than 2.5cm, shallow cones (<1cm) are unlikely to affect the competence of the internal cervical os. Therefore, routine TVS was not carried out to measure the length of the cervix, if the length of the cone removed was less than 1 cm. Cervical encerclage was carried out in those women in whom the cervical length was less than 3 cm. and in those with previous poor obstetric history. Intra partum events such as gestational age at delivery, mode of delivery, duration of first and second stage of labor and birth weight at delivery noted.

**Results:**

During the 3 year study period, a total of 30 pregnancies were reported in 25 women who had previously undergone LLETZ of the cervix. The mean age of the women was 26.2 years and the range was 22 to 31 years. Of the 30 pregnancies reported, six were primigravidae and 25 were multigravidae. Analyzing the indication for LLETZ showed that in 20 cases (80%) LLETZ was done for CIN III lesions; in two cases for CIN II and in three cases for persistent CIN I lesion. The depth of cone removed at the time of LLETZ was less than 0.5cm in six cases (24%), between 0.5cm to 1 cm in 12 cases (48%) between 1 to 1.5cm in four cases (16 %) and more than 1.5cm in three cases (12 %). The mean depth of cone was 1.06cm and the range was 0.4cm to 2cm. (Table I)

Although it is difficult to interpret infertility following LLETZ, in our study 14 pregnancies (46.7% ) occurred within 6 months of treatment to the cervix. In the previous obstetric history, a history of spontaneous abortion was seen in three women, and pre-term delivery in one woman. Analyzing the pregnancy outcome in current pregnancy, out of 30 pregnancy episodes, four women requested MTP with sterilization, and three pregnancies resulted in miscarriages at less than 12 weeks of gestation.

Of the 23 cases where pregnancy continued after 12 weeks, ultrasound scan to assess the cervical length was

carried out in 11 cases. In four cases there were previous pregnancy complications and in 7 cases the depth of cone removed at LLETZ was more than 1cm. The measured cervical length was less than 3cm in two cases and 3-5cm. in nine cases.

Analyzing the correlation between the depth of cone and the cervical length by scan showed that out of the four cases where the depth of cone was more than 1cm, the cervical length was adequate (3-5cm) in 3 cases. In one case where the depth of cone removed was 0.5cm

**Table 1:**  
**Depth of cone removed at the time of LLETZ**  
**(N=25)**

Depth	No.	%
<0.5cm	6	24
0.5-1cm	12	48
1-1.5cm	4	16
>1.5cm	3	12

to 1cm, the cervical length measured less than 3cm. (Table II). By TVS, cervical length, diameter of internal os and funneling of cervix are important criteria for the diagnosis of cervical incompetence. In most of the studies only cervical length has been measured to predict cervical incompetence. Moreover, in this study the scan was done at an early gestation of 13-14 weeks, hence only cervical length was measured. None of the cases showed evidence of widening of internal os in this study.

Cervical encerclage was carried out between 13–16 weeks in six women, and of these, in two cases the cervical length was less than 3cm by scan and in the other four cases there was either previous history of miscarriage or pre-term delivery. There were no postoperative complications. In these six women who had encerclage the sutures were removed at 38 weeks and all of them went into spontaneous labor.

On analyzing the antenatal problems, two women had pre-term delivery at 36 weeks. In one case USG at 14 weeks showed cervical length to be 4.7cms, therefore encerclage was not carried out. The other case presented with PROM at 36 weeks and subsequently had a normal delivery. Twenty one (91.3%) women delivered at term and two (8.7 %) had pre-term delivery.

**Table 2:**  
**Depth of Loop & Cervical Length by Scan**

Depth of Cone	Cervical Length	
	<3 cm	3-5 cm
<0.5 cm	0	1
0.5 – 1cm	1	5
1-1.5 cm	1	3
>2 cm	0	0

Nineteen women went into spontaneous labor and four were induced. Seventeen women had normal vaginal delivery, two were delivered by forceps and four women underwent Cesarean section, indication being preeclamptic toxemia, previous caesarean section and placenta previa. The mean duration of the first stage of labor was 6.6 hours and second stage of labor was 44.6 minutes. The birth weight ranged between 2013gm to 3650gm. The mean blood loss at delivery was 300ml.

### Discussion:

CIN lesions are treated by either ablative or excisional methods. The methods chosen to treat young women in the reproductive age group should not have adverse effect fertility and pregnancy. Ablative methods are not known to be associated with adverse obstetric outcome. However, high grade lesions would necessitate the use of excisional methods such as cold knife conization or LLETZ. Conventional cold conization, depending upon the depth of tissue removed is known to be associated with obstetric complications such as mid- trimester losses and pre-term delivery due to incompetent cervical os. In recent years, studies have shown that LLETZ does not appear to exert adverse effect on subsequent outcome<sup>1,2</sup>.

The amount of cervical cone removed at LLETZ depends on the size and grade of the lesion as high grade lesions require deeper and larger cones. In our study, in 28 % of the cases, the depth of cone removed was >1cm. In those women who have had deeper cones in those women with other risk factors for pre-term labor, TVS offers an excellent opportunity to identify women with short cervixes, so that encephalage can be carried out and be followed up closely for pregnancy complications. In our study encephalage was carried out in two cases as the cervical length was <3cm by USG. Encephalage was also carried out in four other cases in spite of

normal cervical length as they have had either miscarriages or pre-term labor in the past. In our study 8.7 % of the women had pre-term delivery which is similar to that conducted by Haffenden et al which reported 9.9 % incidence of pre-term delivery<sup>3</sup>. Blomfield et al showed 17.5 % per-term delivery rate in their study<sup>4</sup>.

Bigrigg et al have suggested that pregnancy in women after loop diathermy excision resembles that in women who have had laser vaporization or electro coagulation rather than the pattern in those who had a formal cone biopsy<sup>5</sup>. However, Ricciotti et al have reported a 22 % reduction in the length of cervix by USG before and after DLE<sup>6</sup>.

Therefore, although no adverse pregnancy outcome has been reported following LLETZ, it is worthwhile to offer TVS to women who have had extensive surgery with depth of cone >1cm and to women who have had other obstetric risk factors for pre-term labor so that short cervixes can be identified.

In this study no adverse obstetric outcome was noted and there were no increased obstetric complications with increasing depth of the cone outcome. The pregnancy outcome was similar irrespective of whether encephalage was done or not.

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